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ABSTRACT

This research bulletin reports an evaluation study of the program of the Dale Avenue Early Childhood Education Center, funded under Title III of the 1965 Elementary Secondary Education Act. A pre- and post-test experimental and control design using standardized and locally developed instruments was used to evaluate the academic performance of the students in the study. Eight groups of subjects were compared: Dale Avenue experimental--kindergarten and first level; experimental performance objective record groups--kindergarten and first level; disadvantaged control groups--kindergarten and first grade; and, advantaged control groups--kindergarten and first grade. The standardized instruments used include the Peabody Picture Vocabulary Test, the Skill Assessment Tests I and II, and the Anne E. Boehm Test of Concept Formation. Locally developed instruments include the Identity and Body Parts Tests I and II, and the Performance Objectives Record. The latter is a unique device which lists specific skills to be mastered. It acts as the teacher's diagnostic pre-test and also as a post-test. The record goes along with each child to his next class. This helps the new teacher to ascertain what the child is able to do and to help him to continue at his own rate; thus, it enables her to use her own creative talents and to find the teaching method that best suits each child. (Author/JM)

ED 067439

DALE AVENUE SCHOOL

PATERSON, NEW JERSEY

A TITLE III E.S.E.A. PROJECT
PATERSON BOARD OF EDUCATION

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1970 - 1971

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DESCRIPTION OF THE POPULATION STUDIED

The Title III research design as formulated in the original proposal consisted of three experimental groups and five control groups.

These were:

Pre-Kindergarten Experimental Group
Dale Avenue School- 132 children

Pre-Kindergarten Control Group
Advantaged- 15 children
Disadvantaged- 15 children

Kindergarten Experimental Group
Dale Avenue School- 117 children

Kindergarten Control Group
Advantaged- 15 children
Disadvantaged- 15 children

Kindergarten Experimental Group
#24 with Performance Objectives
38 children

Kindergarten Control Group
#24 without Performance Objectives
34 children

DESCRIPTION OF THE PRE-KINDERGARTEN CHILDREN

One hundred and twenty Pre-kindergarten children at Dale Avenue School (whose chronological ages at pre-test time averaged four years and three months) form one part of the experimental group in the Title III study. The children are in eight classes which are labeled Pre-kindergarten I,II,III, and IV A.M. and Pre-kindergarten I,II,III, and IV P.M. Each class has one teacher and two teacher aides. There are fifteen children per class and the same teachers and aides teach both the A.M. and P.M. classes.

Sixty-one percent of the children come from Title I school areas and are bussed to Dale Avenue School five days a week. They attend either the A.M. or P.M. session. The children, who come in the morning, eat lunch at school and are then bussed home. The children, who come in the afternoon, have lunch soon after their arrival and are bussed home at around three o'clock.

Thirty-one percent of the one hundred and twenty Pre-kindergarten children come from families where the parents are separated. Five percent come from families where the parents are divorced and four percent where the mothers are unmarried. The average family income is around $5,000 per year. Twenty-eight percent of the families receive some welfare.

The fathers occupations are varied. They include machine operators, salesmen, assemblers, key punch operators, electronic workers, patrolmen, platform operators, factory workers, mechanics, laborers, private detectives, truck drivers, box strippers, warehouse workers, firemen, green keepers, pressers, clerks, electricians, hospital orderlies, garment cutters, musicians, mailmen, dye casters, printers, teachers, sheet metal workers, carpenters, special service coordinators, bus drivers, machinists, dental technicians, maintenance men, shoe makers, welders and repair men.

The mothers occupations include hair stylists, diet aides, waitresses, nurses, students, packers, meter maids, factory workers and housewives.

Forty-four percent of the one hundred and twenty Pre-kindergarten children are Black, twenty percent are White, twenty-one percent are Puerto Rican and fifteen percent are Columbian, Chilean, Costa Rican and Chinese. Fifty-three percent are boys and forty-seven percent are girls.

Thirteen percent of the one hundred and twenty children in the study are repeating pre-kindergarten. They were retained because it had been decided by their teachers, the psychologist and the director and assistant director of Pre-kindergarten that this would be beneficial to them.

The Kindergarten population is comprised of a similar group of children whose family income was slightly higher but whose test scores were similar to this year's Pre-kindergarten children when they entered Dale Avenue School last year.

DESCRIPTION OF PUPIL SELECTION

The Pre-kindergarten and Kindergarten children at Dale Avenue Early Childhood Education Center, who comprise our experimental group, are predominantly from areas where the schools receive Title I funds. Applications are taken on a first come, first served basis from people who have either read about the school in the newspaper or heard of it from the following sources:

Guidance Counselors
Social Workers
School Nurses
Principals
PTA Council
Paterson Task Force
Mental Health Clinic of Passaic County
Passaic County Welfare
Bureau of Children's Services
Jewish Children and Family Services
Juvenile Relations Court
Probation Department
Parents of Dale Avenue Pupils
Staff of Dale Avenue School
Day Care-One Hundred
Four C's Program (a group of thirty or forty community organizations)

The only new children admitted to the program each year are the Pre-kindergarten children. These children move through Kindergarten, First, Second and Third grade and then return to their area school in Fourth grade.

THE CONTROL GROUPS

The Pre-kindergarten disadvantaged control group was randomly selected from children who came to enroll at Dale Avenue School but who were not admitted because of lack of room. The Pre-kindergarten advantaged control group was selected from the Paterson Community and from Lincoln Park.

The Pre-kindergarten and Kindergarten Experimental Group at Dale Avenue School is housed in a converted factory building. Bright colors constitute the decor. Pastel walls are complemented with lovely autumn colored carpeting. All furniture and permanent fixtures are geared to the height of the children.

Materials and equipment are geared to fostering gross motor skills and to build conceptual and perceptual skills.

The Dale Avenue Pre-kindergarten and Kindergarten staff is a hand picked group of master teachers who are assisted in their classroom duties by an Associate Teacher or Teacher Assistant and by a Teacher's Aide. Three people staff each Pre-kindergarten classroom and two people staff the Kindergarten classrooms.

Operating under his own Performance Objective Record each child moves through the Pre-kindergarten and Kindergarten at his own rate as he masters skills.

As each child was individually tested on the Peabody Picture Vocabulary Test (Form A), Skill Assessment Test I and Identity and Body Parts Check List I, the teachers were given complete feedback on the performance of each child.

Workshops were held to enhance the teaching staff's understanding of program content and to enable them to better utilize the materials and equipment available to them in the classrooms. Because of Paterson's close proximity to New York, it was possible to have such noted people as Dr. Phoebe Lazarus, Dr. Marion Blank, and Mr. Murray Tesser present teacher training sessions.

The Pre-kindergarten children received complete medical examinations and audiometric screening.

Specialists in Physical Education, Art, Music, and Science serviced the Pre-kindergarten and Kindergarten children in these areas.

Classrooms were monitored by the Title III team and by Miss Harriet Gibbs, Pre-kindergarten Director, and Mr. Wild, Principal, Dale Avenue School to assure that the program was being properly carried out.

The Pre-kindergarten Advantaged and Disadvantaged Control Groups were comprised of children who had had no previous pre-school experience and who received

no formal training between pre and post testing.

All the Kindergarten Control Groups were housed in regular Paterson school buildings and all but Control Group #24 (with Performance Objectives) were involved in a standard Kindergarten experience. Control Group #24 (with Performance Objectives) was tested and given testing feedback and was presented with Performance Objectives after February 1, 1971. The teacher's from both Control Groups #24 (with and without Performance Objectives) had aides in their classrooms. The teacher from Control Group #24 (with Performance Objectives) also attended all teacher training workshops.

All children in the Experimental Group and the Control Group were not only pre and post-tested with the Peabody Picture Vocabulary Test, and Identity and Body Parts Check List, but they were also given the Anne E. Boehm Test of Basic Concepts.

It is important to note that the Title III team was not hired until October 15, 1970 and that while pre-testing began immediately in the Pre-kindergarten at Dale Avenue School, it did not begin in the Kindergarten until December or January. Consequently, the pre-scores of the Dale Avenue children in Kindergarten reflect four months in the classroom.

DEFINITION OF TERMS USED

Culturally Disadvantaged. The most striking feature of the inner city culturally disadvantaged is that they are poor. Their yearly incomes are generally around $5,000. Many come from broken homes and live in densely populated areas in substandard housing. Culturally disadvantaged children live in a world that is dominantly physically rather than ideationally and verbally controlled. They lack early experiences of an educationally stimulating nature. (1) Children from culturally disadvantaged homes often do poorly in school for the following reasons. (11)

1. The lack of an educational tradition in the home.
2. The lack of books, toys and games in the home.
3. Insufficient standard English language.
4. Inadequate motivation to pursue a long-range educational career.
5. Inadequate self image.
6. Poor health, improper diet, frequent moving and noise.

Culturally Advantaged. Most of the culturally advantaged children come from so called middle-class homes where the average yearly incomes are generally over $8,000. They live in less populated areas than the disadvantaged and there are less people per apartment or house. In these middle-class homes communication is carefully nurtured. Children are encouraged to speak in words, phrases and complete sentences. They have a repertoire of nursery rhymes, poems, stories and songs which have been taught by rote. There are many books, toys and games in their homes. Their curiosity is cultivated and questions are answered by parents. They learn to talk freely with parents, siblings, other children, relatives, neighbors, shopkeepers and friends of parents.

RATIONALE OF THE TESTING PROGRAM

The Materials Used

The Peabody Picture Vocabulary Test is an individually administered test of verbal intelligence that was developed by Lloyd M. Dunn, Ph.D, Director of the Institute on Mental Retardation and Intellectual Development of George Peabody College of the University of Illinois. The test, which requires no verbal response from the testee and no special training requirement for the examiner, is a very good rapport establisher. It is a time saver (takes only fifteen minutes to administer) yet a valid and reliable individual intelligence test. [1].

The test must be administered in a prescribed manner (described in the manual that comes with the test) and the examiner must give no additional clue words or gestures. It is a graduated series of one hundred and fifty plates, each containing four pictures. To administer it the examiner, having taken the child into a quiet room, provides a stimulus word orally as in "Point to man." The testee then indicates (usually by pointing) which picture on the plate best illustrates the meaning of the stimulus word. Since the plates are arranged in ascending order of difficulty, it is necessary only to test the subject from a basal of eight consecutive correct responses to a ceiling of six errors in eight consecutive plates.

1. Test and Educational Materials Catalog, American Guidance Service, Inc., (Minnesota, 1969), p.4.

Thus the scale is only given in the critical range. There are different starting points for different age groups. For example, children three years and three months old start with plate number fifteen while children four years and three months to five years and five months start with plate number twenty-five. Two forms of the test (A and B) are provided with different stimulus words for each. A raw score (number of correct responses) can then be quickly converted to three types of derived scores; mental age, standard score, intelligence quotient and percentiles. The difference of one month in age between subjects can place a subject in a different age bracket (when determining scores) and cause a considerable change in standard score.

The Peabody Picture Vocabulary Test was used not only to determine standard English vocabulary skills (receptive language) and I.Q. but to provide a diagnostic tool to identify children, (1) whose quality, quantity and intelligibility of speech was poor; (although test requires pointing only, the tester engages the pupil in a short preliminary conversation. Many pupils volunteer comments on the pictures;) (2) who lacked ability to look at several pictures and select the one that best applied to stimulus words; (3) who showed excessive behavioral responses (perfunctory effort, excessive shyness, much need for praise, short attention span); (4) who were possibly disabled in areas of hearing, vision and motor activity; (5)whose understanding of standard English vocabulary was so limited that they were not able to score.

The testors were hired on a per diem basis for the testing and had no reason to wish that any group of children would do better on the tests than any other group. They were not involved in the program in any other capacity.

Skill Assessment Tests I and II

The Pre-kindergarten Skill Assessment Test I inventories some of the skills which are included on the Performance Objectives and on the Stanford-Binet Intelligence Scale. Ability to name circle, square, and triangle, to name colors, to rote count, to identify numerals presented in random order, ability to count objects, and to see likes and differences are quickly assessed by this test. Here, the child must verbalize in order to answer in contrast to the Peabody Picture Vocabulary Test where he is only required to point to a pictorial representation of a word.

Kindergarten Skill Assessment Test II is an extension of Test I. It contains far more items than the Pre-kindergarten test. Some of the items are above expected developmental performance for Kindergarten children because it was felt that our children could master these skills. We have set as our norm that a problem is solved by children of a certain age when 3/4's of the children of this age respond correctly. Our children have exceeded these norms.

The Identity and Body Parts Test I and II

The staff-made Identity and Body Parts Test (Part I for Pre-kindergarten and Part II for Kindergarten) was developed because the Title III staff considered knowledge of self essential before a child can sharpen his intelligence. Early childhood literature tells us that middle class children receive early training in knowledge of identity and body parts. (Parents label eyes, nose, etc., in many games, stories and songs) but many disadvantaged children do not receive this beneficial help. The staff felt that learning all about who they are (their name, sex, where they live, etc.) and the labels for the parts of their bodies would help Dale Avenue children to have an understanding of their own uniqueness and worth as well as to give them more standard English language which would help them to see likenesses and differences and to label and think. Piaget tells us that thought and language do appear to interact with one another. [2]. The logical place to start would certainly seem to be with the children themselves.

2. Early Childhood Curriculum, Celia Stendler Lavatelli, "Piaget's Theory Applied to A Center for Media Development," Inc. Book, American Science and Engineering, Inc., Boston, 1970, p.54.

Anne E. Boehm Test

The Anne E. Boehm Test (Form I) is a group test of basic concepts that indicates not only that a child knows certain concepts but that he can indicate this by marking the proper concept with an X.

The instrument consists of three sample questions followed by twenty-five pictorial items arranged in approximate order of increasing difficulty. Each item consists of a set of pictures, about which statements are read aloud to the children by the examiner.

The test requires approximately fifteen to twenty minutes to administer to Pre-kindergarten and Kindergarten children.

The concepts tested are top, through, away from, next to, inside, some but not many, middle, few, farthest, around, over, widest, most, between, whole, nearest, second, corner, several, behind, row, different, almost, after, half.

Performance Objectives Record

Educational Testing Service of Princeton, New Jersey was contacted in April 1969 to seek assistance in creating and formulating an evaluation program which would assess the development and activities of the individual Pre-kindergarten and Kindergarten child. Mr. J. Robert Cleary, Director of Field Services, Educational Test Services, suggested that we communicate to our staff the need to compile a list of goals and objectives leading to a sequence of behavioral objectives.

Out of this grew the Performance Objective Record. This is a unique device which lists specific skills to be mastered. They are compatible with the developmental sequence of the four and five year olds as was illustrated by empirical testing in the pilot program initiated at Dale Avenue School in 1970.

The performance objective record not only provides an evaluation instrument, but also structures the material presented in the Pre-kindergarten and Kindergarten classroom. The teacher, however, has the freedom to teach the skills and concepts in any way she wishes. This enables her to use her own creative talents and to find the teaching method that best suits each child. Children move at their own rate from skill to skill.

For Pre-kindergarten and Kindergarten the Language Arts area was broken down into Listening, Naming, Encoding, and Speaking. Science was broken down into Observing and Classification. Math was included as well as Writing and Motor Skills and Perceptual Motor Skills.

The Performance Objective Record acts as the teacher's diagnostic pre-test and, as a post-test. The record goes along with each child to his next class. This helps the new teacher to ascertain what the child is able to do and to help him to continue at his own rate.

ANALYSIS AND RESULTS OF DATA

In the pages that follow the analysis and results of the data from the Peabody Picture Vocabulary Test, Forms A and B, the pre and post Identity and Body Parts Test, and pre and post Skill Assessment Test can be found. It will include graphs, tables and some discussion.

Below is a glossary of terms available for your referral.

Glossary of Terms Used in this Section

1.	P.P.V.T.	Peabody Picture Vocabulary Test
2.	P.O.R.	Performance Objective Record
3.	N	Number of pupils tested .
4.	Mean	Average
5.	S.D.	Standard Deviation the average deviation around the mean used as an error estimate.
6.	AoV	Analysis of Variance shows whether or not there are any differences among the group.
7.	Partitioning the Variance	Same as analysis of variance.

8.	Posteriori analysis	Follow-up of analysis of variance to show exactly where the differences lie.
9.	t= value	Comparison of pre and post data to test if there are any significant differences.
10.	f	Ratio of group variances (of greater mean squares to lesser mean squares)
11.	df	Degrees of freedom
12.	α	Alpha level- level of probability.

ANALYSIS AND RESULTS OF DATA

Peabody - Pre-Kindergarten

The means, standard deviations and number in each group are presented in Table 1.

TABLE 1

Group	N	Mean	S.D.
Dale Avenue	98	80.0	20.50
Disadvantaged	12	79.81	15.49
Advantaged	15	115.26	6.12

Partitioning the variance of the Pre-test (form A) a highly significant F value of 23.12 is obtained. This is significant well beyond the critical value of 4.78 at the .01 level. (see table 2)

TABLE 2

AoV Peabody Pre-Kindergarten Pre-Test (Form A)				
Source	Sum of Squares	df	Mean Squares	F
Between Groups	16611.91	2	8305.95	23.12*
Within Groups	44169.95	123	359.10	
Total	60781.87	125		

*F= 4.78
α .01

Constrasting pairs of means the data shows the advantaged group performing at a significantly higher level than the Dale Avenue or Disadvantaged Control Groups. There is no statistically significant difference between the Dale Avenue and Disadvantaged Groups. (see table 3)

TABLE 3

Group	Mean	t-value
Advantaged	115.26	6.71*
Dale Avenue	80.0	
Disadvantaged	79.81	<1.0

*F= 2.26
α .01 (15,99)

The post-test (form B) shows again that there are significant differences between groups. The obtained value of 12.11 being significant well beyond the .01 level of probability. (see table 4) The mean and standard deviations for the different groups are presented in Table 5.

TABLE 4

AoV Peabody
Pre-Kindergarten Post-Test (Form B)

Source	Sum of Squares	df	Mean Squares	F
Between Groups	9557.17	2	4778.58	12.11
Within Groups	48112.02	122	394.36	
Total	57669.20	124		

F= 4.78
α .01

TABLE 5

Group	N	Mean	S.D.
Dale Avenue	98	89.40	19.80
Advantaged	15	114.06	12.44
Disadvantaged	11	81.09	24.45

Contrasting means of the groups indicates that the Advantaged Group is still performing at a level superior to the other groups. Although not statistically significant it should be noted that the difference between the Dale Avenue and Advantaged Groups has diminished while the Dale Avenue children have begun to pull away from the Disadvantaged Control Group. (See table 6)

TABLE 6

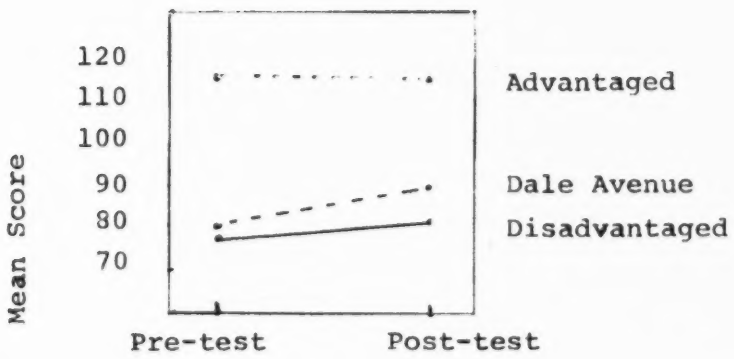
Group	Mean	p -Score
Advantaged	114.06	4.48*
Dale Avenue	89.40	
Disadvantaged	81.09	1.31

*P= 2.26
< .01 (15.98)

The progress of these children over the year is graphically represented in Figure 1.

FIGURE 1

Peabody performance of Pre-Kindergarten plotted over time.



Discussion

Of the one hundred and thirty-two children who had the Peabody A administered to them, two Black children and twenty Spanish speaking children were not scoreable on this test. The test was translated into Spanish and given to the Spanish speaking children. They were still unable to score on this version. By post-test time, only two Spanish speaking children were not able to score. Post-test results also show that the Dale Avenue children had made an I.Q. gain of almost ten points bringing the average I.Q. to within the range of the national norms.

Peabody - Kindergarten

Analysis of Variance of the Peabody, pre-tests (form A) shows that there is a significant difference between the mean scores for all groups. (see table 7)

TABLE 7

	AoV Peabody (Form A)			
Source	Sum of Squares	df	Mean Squares	F
Between groups	12952	4	3238	5,352*
Within groups	69015	114	605	
Total	81967	118		

* F- 3.51
α .01

The mean, standard deviation and number of subjects in each group are presented in table 8.

TABLE 8

Group	N	Mean	S.D.
Dale Ave.	30	97.26	19.11
Advantaged	15	105.50	14.40
Disadvantaged	12	78.40	27.30
Weiler-Kdgn#24 with P.O.R.	33	81.10	25.90
O'Rourke-Kdgn #24 without P.O.R.	29	77.48	35.71

The F ratio of 5.352 is significant beyond the .01 level of probability. Contrasting the means for the groups, we find that the Kindergarten Dale Avenue and Advantaged groups score significantly higher than do the other groups, with no significant difference between the Dale Avenue and Advantaged children. (see table 9)

TABLE 9

Groups	Mean	F-Value
Advantaged	105.50	F=1.058
Dale Avenue	92.28	F=3.02*
-Kdgn#24 With P.O.R.	81.10	F=1.0
Disadvantaged-Kdgn #24	78.40	
-Kdgn#24 Without P.O.R.	77.48	

*F= 2.30
α<.01 (30.33)

The Dale Avenue children also show a significant gain when post-tested with the Peabody (Form B). The difference between pre and post testing being significant well beyond the .01 level with a t value of 5.869. (t= 2.75 α<.01)

The means and standard deviation for the groups on the post-test are presented in table 10.

TABLE 10

Group	N	Mean	S.D.
Dale Avenue	30	105.46	16.84
Advantaged	15	108.70	19.91
Disadvantaged	12	82.31	23.19
-Kdgn#24 with P.O.R.	33	88.00	23.71
-Kdgn #24 without P.O.R.	29	83.62	30.2

Analysing the differences between groups on Form B of the Peabody we again find that there are significant differences in the performance of the different groups. (see table 11)

TABLE 11

AoV Peabody (Form B)

Source	Sum of Squares	df	Mean Squares	F
Between groups	13477.177	4	3369.294	6.119*
Within groups	62762.570	114	550.548	
Total	76239.747	118		

*F= 3.51
α .01

Follow-up analysis contrasting pairs of means reveals that, as in the pre-test, the Kindergarten Dale Avenue and Kindergarten Advantaged groups score significantly higher than do the other groups. The difference is slightly greater than on the pre-test. (F=3.36) Also, the

difference between the Kindergarten Dale Avenue and Kindergarten Advantaged groups has become somewhat smaller. (see table 12)

TABLE 12

Group	Mean	F- Value
Advantaged	108.70	F=0.431
Dale Avenue	105.46	F=3.360*
-Kdgn#24 with P.O.R.	88.00	
-Kdgn#24 without P.O.R.	83.60	
Disadvantaged	82.30	

*F= 2.30
$\alpha < .01$ (30.33)

Mental Age - Pre-Kindergarten

(derived from Peabody Picture Vocabulary Test)

Applying Analysis of Varinace to the pre-test data shows that there is a significant difference between groups. The obtained F value of 15.06 is significant beyond the .01 level of probability. (see table 13.) The mean and standard deviation for each group is presented in table 14.

TABLE 13

AoV Source	Pre-Test Sum of Squares	df	Mental Age (in months) Mean Squares	F
Between groups	4566.23	2	2283.11	15.06*
Within groups	18939.25	125	151.51	
Total	23505.49	127		

*F= 3.47
$\prec$ .01

TABLE 14

Mental Age in months Pre-test			
Group	N	Mean	S.D.
Dale Avenue	103	42.94	12.73
Advantaged	15	59.40	11.43
Disadvantaged	9	34.0	7.19

A posteriori analysis of the means of the groups reveals that there are significant differences between all groups. (see table 15.)

TABLE 15

Group	Mean	F-Score	
Advantaged	59.40		
		4.84*	
Dale Avenue	42.94		4.90*
		2.09*	
Disadvantaged	34.00		

*F= 2.042
$\sim$ .05

Analysis of the post-test mental age scores indicates that there are significant differences among the means of the different groups. (see table 16) The means, standard deviation and number of subjects are presented in table 17.

TABLE 16

AoV Mental Age Post-test (in months)

Source	Sum of Squares	df	Mean Squares	F
Between groups	2783.28	2	1391.64	6.96*
Within groups	24963.07	125	199.70	
Total	27746.36	127		

*F=3.47
$\prec$.01

TABLE 17

Mental Age in months (Post-test) Pre-K			
Group	N	Mean	S.D.
Dale Avenue	103	53.78	14.89
Advantaged	15	62.86	10.11
Disadvantaged	9	40.66	9.21

The obtained F value of 6.96 exceeds the critical value beyond the .01 level of probability.

Analysis of the group means reveals that the differences lie between all groups. (see table 18)

TABLE 18

Group	Mean	F-Values
Advantaged	62.86	2.32*
Dale Avenue	53.78	3.73*
Disadvantaged	40.66	2.67*

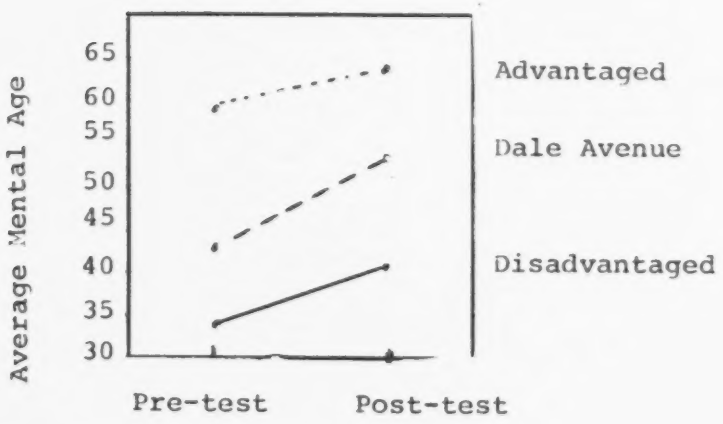
*F= 2.26 α .01 (15,103) **F= 2.59 α .01 (9,103) ***F= 2.59 α .05 (9.15)

The t- test for correlated samples shows that there was a highly significant gain in mental age between the pre and post tests for the Dale Avenue Kindergarten. (t= 11.36) The obtained value is significant beyond the .001 level.

The mental age gains made by the three groups are presented gaphically in Figure-2.

FIGURE 2

Mental Age Gains of Pre-Kindergarten groups over time. (in months)



Pre-Kindergarten Mental Age Gains

At pre-test, the Dale Avenue children were 10.89 months behind in mental age as compared to chronological age. At post-test time, the Dale Avenue group was only 6.06 months behind their chronological age. These children had increased their mental age by 10.84 months in 6.01 months of chronological time.

The Disadvantaged Control Group was 12 months behind in mental age at pre-test time, and were 10.74 months behind at post-testing. This group had gained an average of 6.66 months in mental age over a period of 5.4 months.

The Advantaged Group was 14.47 months ahead of their chronological age in terms of mental age at pre-test time. At post-test time, they were still 14.13 months ahead. They gained an average of 3.46 months of mental age in 3.80 months of chronological age.

Mental Age - Kindergarten

(derived from Peabody Picture Vocabulary Test)

Analysis of Variance reveals that there are significant differences between the groups on their Mental Age on the Pre-tests. Table 19 shows F ratio of 6.86 which is significant beyond the .01 level. The means, standard deviation and number of subjects are presented in table 20.

TABLE 19

AoV Mental Age Pre-test (in months)				
Source	Sum of Squares	df	Mean Squares	F
Between groups	12290.73	4	3072.68	6.86*
Within groups	55511.63	124	447.67	
Total	57802.37	128		

*F= 3.47
$<.01$

TABLE 20

Kindergarten Mental Age in months (Pre - Test)			
Group	N	Mean	S.D.
Advantaged	15	77.00	17.81
Dale Avenue	30	67.66	17.81
Kdgn#24 with P.O.R.	35	52.82	20.49
Kdgn#24 without P.O.R.	34	51.14	25.78
Disadvantaged	15	47.86	20.50

A posteriori analysis reveals that the means for the Kindergarten Dale Avenue and Kindergarten Advantaged Control Group are significantly higher than for the other three groups. (see table 21)

TABLE 21

Group	Mean	F-Score
Advantaged	77.0	
		F= 1.39
Dale Avenue	67.6	
		F= 2.81*
Kdgn#24 with P.O.R.	52.8	
		F= 1.0
Kdgn#24 without P.O.R.	51.4	
Disadvantaged	47.8	

*F= 2.30
α .01 (30.35)

As shown in Table 21 the obtained F value is significant beyond the .05 level.

Analysis of the Post-test results indicate that as in the Pre-test the Dale Avenue and Advantaged groups score significantly higher than the other groups. The results of the Analysis of Variance are presented in Table 22. The means, standard deviation and number of subjects are presented in table 23.

TABLE 22

AoV Mental Age Post-tests (in months)				
Source	Sum of Squares	df	Mean Squares	F
Between groups	14332.3	4	3583.07	9.04*
Within groups	49927.24	126	396.24	
Total	64259.55	130		

*F= 3.47
✓ .01

TABLE 23

(Kindergarten) Mental Age in months Post-test			
Group	N	Mean	S.D.
Advantaged	15	81.93	19.69
Dale Avenue	30	78.50	16.22
Kdgn#24 with P.O.	35	58.97	19.90
Kdgn#24 without P.O.	34	58.67	23.53
Disadvantaged	15	53.80	17.57

Follow up analysis of the group means shows that the difference between the Kindergarten Dale Avenue and the Advantaged Group are even more significant when compared to the other groups. (see table 24.)

TABLE 24

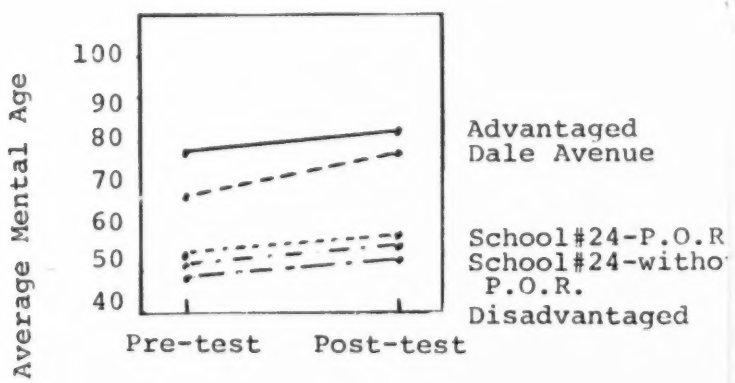
Group	Mean	F-Score
Advantaged	81.93	F= .054
Dale Avenue	78.50	F=3.97*
Kdgn #24 with P.O.	58.97	F=1.0
Kdgn #24 without P.O.	58.67	
Disadvantaged	53.8	

* F= 2.30
α .01 (30.35)

The data for the Mental Age gains of the different groups is graphically represented in Figure-3.

FIGURE 3

Mental Age Gains (in months) of Kindergarten groups over time.



It should be noted that the obtained t value of 3.97 is greater than that found on the pre-test. It should be further noted that the statistical difference between the Kindergarten Dale Avenue Group, and the Advantaged Control Group is even less than it was at pre-test time.

Kindergarten - M.A. Gains

The Dale Avenue children were 1.06 months ahead in their mental age as compared to their chronological age at pre-test time. At post-test time, they were 7.04 months ahead. They had gained 10.84 months of mental age in an average of 3.86 months of chronological time.

The Advantaged Control Group was 5.54 months ahead of their chronological age in terms of mental age at pre-testing. At post-test time they were 8.87 months ahead in terms of mental age. They had gained 4.93 months of mental age in 1.6 months of chronological time.

The Disadvantaged Control Group was 19.20 months behind their chronological age at pre-testing. At post-testing they were 16.4 months behind. They had gained 5.94 months in mental age over a period of 3.14 months.

The Control Group- School # 24 without performance objectives was 17.74 months behind in mental age at pre-test time. They were still 13.97 months behind at post-test time. They had gained 7.03 months of mental age over a period of 3.76 months.

The Control Group- School #24 with performance objectives was 14.09 months behind at pre-test time. They were 10. 37 months behind at post-test time. They gained an average of 7.46 months of mental age over a period of 3.74 months.

Skill Assessment- Pre-Kindergarten

Applying Analysis of Variance to the Skill Assessment pre-tests reveals that there are significant differences among the means of the groups. The obtained F value of 9.32 exceeds the critical value at the .01 level. (see table 25) The means, standard deviation and number of subjects are presented in table 26.

TABLE 25

AoV Source	Pre-Kindergarten Skill Assessment Pre-test Sum of Squares	df	Mean Squares	F
Between groups	7788.75	2	3894.37	9.32*
Within groups	53465.94	128	417.70	
Total	61254.70	130		

*F= 4.78
~.01

TABLE 26

Group	N	Mean	S.D.
Advantaged	15	63.96	24.40
Dale Avenue	101	52.20	20.31
Disadvantaged	14	31.71	17.59

A Posteriori analysis shows that there are significant differences among the means of all groups. (see table 27)

TABLE 27

Group	Mean	F=Score
Advantaged	53.96	F=2.08*
Dale Avenue	52.20	F=3.52**
Disadvantaged	31.71	

*F= 1.79 $\prec$.05 (15,101)

**F= 2.26 $\prec$.01 (14,101)

The advantaged group performs best followed by the Dale Avenue and Disadvantaged Groups in that order.

Analysis of the Skill Assessment Post-test shows that there are significant differences between the means of the groups. The obtained F value of 36.94 is highly significant. (see table 28). The means, standard deviation and number of subjects are presented in table 29.

TABLE 28

AoV Pre-Kindergarten Skill Assessment Post-test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	17906.42	2	8953.21	36.94
Within groups	31020.18	128	242.34	
Total	48926.61	130		

F= 4.78 $\prec$.01

TABLE 29

Group	N	Mean	S.D.
Advantaged	15	77.73	17.98
Dale Avenue	101	81.70	13.90
Disadvantaged	14	43.64	23.06

The analysis of means following the partitioning of sums of squares provides some very interesting results. The Dale Avenue Pre-kindergarten children actually outperform the Advantaged Controls although the difference is not statistically significant. (see table 30.)

TABLE 30

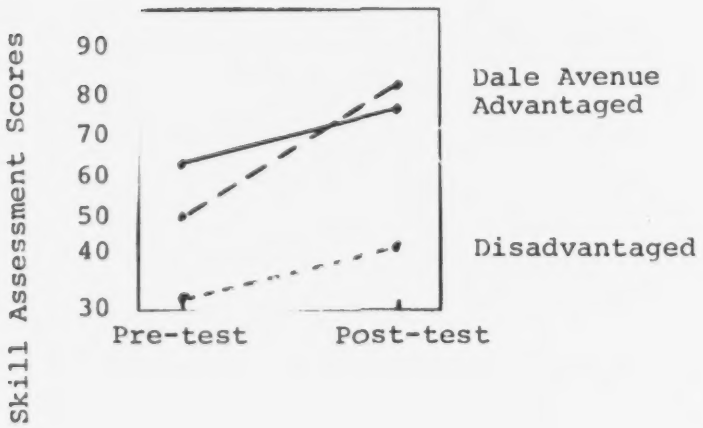
Group	Mean	F-Score
Dale Avenue	81.70	
		F= 0.92
Advantaged	77.73	
		F= 5.89*
Disadvantaged	43.64	

*F=2.042
α<.05

The previous data is graphically presented in Figure-4.

FIGURE 4

Mean Skill Assessment Scores Pre-Kindergarten Plotted Over Time.



On this particular test, the Dale Avenue children make tremendous gains between pre and post testing ($t = 15.00$, $p < .001$). Although the disadvantaged group makes some gain, they are actually falling further behind in terms of their performance relative to the other groups.

Skill Assessment - Kindergarten

An Analysis of Variance was applied to the pre-test data. The resulting F value of 11.43 was highly significant, well beyond the .01 level of probability. (see table 31). The means, standard deviation and number of subjects are presented in table 32.

TABLE 31

Kindergarten AoV Skill Assessment Pre-test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	9246.45	4	2311.61	11.43*
Within groups	24047.27	119	202.07	
Total	33293.73	123		

*F= 3.51
$\alpha < .01$

TABLE 32

Group	N	Mean	S.D.
Advantaged	15	79.16	5.82
Dale Avenue	30	73.40	12.11
Kdgn#24 with P.O.R.	34	58.50	15.96
Kdgn#24 without P.O.R.	30	58.84	14.66
Disadvantaged	14	54.45	18.32

A Posteriori analysis, contrasting pairs of means shows that the Kindergarten Dale Avenue and Advantaged Controls scored significantly better on this test than did the other groups. There was no significant difference between the Advantaged and Dale Avenue children.

TABLE 33

Group	Mean (on score of 100)	F-Score
Kdgn. Advantaged	79.16	
		F=1.28
Kdgn. Dale Avenue	73.40	
		F=4.00*
Kdgn.#24 without P.O.R.	58.84	
		F=1.0
Kdgn.#24 with P.O.R.	58.50	
Kdgn. Disadvantaged	54.45	

*F= 2.30
α.01 (30,34)

As can be seen from table 33 the F value for the contrasted difference between the Dale and Advantaged Kindergarten groups and all other Kindergarten groups far exceeds the critical value for F at the .01 level.

A t test for correlated samples was applied to the pre and post differences on the Skill Assessment Test and yielded a t value of 7.80 which is significant beyond the .01 level of probability.

The results of the post-test on Skill Assessment reveals much the same thing as the pre-test. Analysis of Variance reveals significant differences among means for all groups. (see table 34). The means, standard deviation and number of subjects are presented in table 35.

TABLE 34

AoV Kindergarten Skill Assessment Post-test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	7652.45	4	1913.11	11.18*
Within groups	20345.09	119	170.96	
Total	27997.55	123		

*F= 3.51
α .01

TABLE 35

Group	N	Mean	S.D.
Advantaged	15	84.50	6.34
Dale Avenue	30	84.71	9.61
Kdgn#24 with P.O.R.	34	72.11	15.37
Kdgn#24 without P.O.R.	30	68.98	13.11
Disadvantaged	14	62.85	17.85

The F value of 11.18 far exceeds that expected at .01 level of probability. Post analysis of the data shows that the Kindergarten Advantaged and Dale Avenue children score significantly higher than the other groups, with no difference between the former. (see table 36)

TABLE 36

Group	Mean	F-Score
Kdgn. Dale Avenue	84.71	F=1.0
Kdgn. Advantaged	84.50	F=3.05*
Kdgn.#24 with P.O.R.	72.11	F=1.0
Kdgn.#24 without P.O.R.	68.98	
Kdgn. Disadvantaged	62.98	

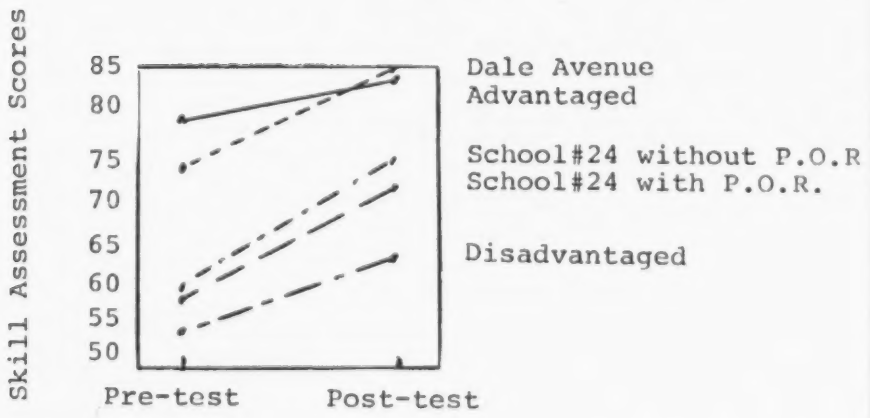
*F= 2.66
α .01 (15.34)

** It is interesting to note that although there was no significant difference between the Kindergarten Dale Avenue and Kindergarten Advantaged groups, the Kindergarten Dale Avenue group actually scored higher on the average on this test than did the Advantaged Controls.

The above data is presented graphically in Figure- 5.

FIGURE-5

Mean Skill Assessment Scores
Kindergarten- Plotted over time.



Identity and Body Parts-Pre-Kindergarten

Analysis of the pre-test shows that there is a significant difference be- among groups. The F value of 9.28 being significant beyond the .01 level. (see table 37). The means, standard deviation and number of subjects are presented in table 38.

TABLE 37

Pre-Kindergarten AoV Identity and Body Parts Pre-Test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	5486.25	2	2743.12	9.28*
Within groups	36942.80	125	295.54	
Total	42429.05	127		

*F= 4.78
α .01

TABLE 38

Croup	N	Mean	S.D.
Advantaged	15	67.30	15.22
Dale Avenue	100	71.70	17.50
Disadvantaged	12	49.20	15.85

A Posteriori analysis of means reveals that the Dale Avenue and Advantaged groups score significantly higher on this test than do the Disadvantaged group. (see table 39)

TABLE 39

Group	Mean	F-Score
Dale Avenue	71.7	F=0.92
Advantaged	67.3	F=2.72*
Disadvantaged	49.2	

*F= 2.48
$\prec$ .05 (12.15)

Even though the pre-test scores were inflated the children still showed a significant increase between pre and post testing. The $\underline{t}$ value for correlated samples was 9.0 exceeding the critical ($t \prec .01$) of 3.40.

Identity and Body Parts-Pre-Kindergarten

Analysis of the post-test data indicates, that there are still differences among groups. The F value of 45.62 being very significant well beyond the .01 level. (see table 40). The means, standard deviation and number of subjects are presented in table 41.

TABLE 40

Pre-Kindergarten AoV Identity and Body Parts Post-test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	10794.15	2	5397.07	45.62*
Within groups	14667.14	124	118.28	
Total	25461.29	126		

* F= 4.78
$< .01$

TABLE 41

Group	N	Mean	S.D.
Advantaged	15	78.13	7.80
Dale Avenue	100	88.60	9.50
Disadvantaged	12	57.62	20.25

A Posteriori analysis of the means of the groups on the post-test reveals that the Dale Avenue children score significantly better than the Advantaged Control Group. (see table 42). This contrasts to the pre-test scores where the Dale Avenue subjects scored higher than the Advantaged Controls but not significantly so.

TABLE 42

Group	Mean	F-Score
Dale Avenue	88.6	
		F= 3.47*
Advantaged	78.13	
		F= 4.87*
Disadvantaged	57.62	

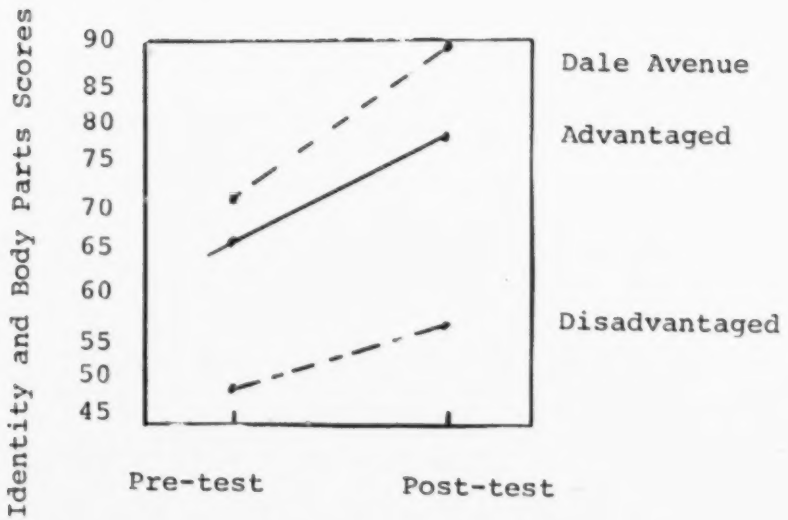
* F=2.26 $\prec$.01 (15.100)

**F= 3.80 $\prec$.01 (12.15)

The Identity and Body Parts results are graphically represented in Figure-6.

FIGURE 6

Pre-Kindergarten - Identity and
Body Parts Scores- Plotted Over Time.



Identity and Body Parts- Kindergarten

Analysis of the pre-test data shows that there is a significant difference among 1 groups. (see table 43). The means, standard deviation and number of subjects are presented in table 44.

TABLE 43

Kindergarten AoV Identity and Body Parts Pre-test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	10864.88	4	2716.22	9.25*
Within groups	35495.27	121	293.34	
Total	46360.15	125		

*F= 3.47
α .01

TABLE 44

Group	N	Mean	S.D.
Advantaged	15	86.00	8.28
Dale Avenue	30	79.60	9.10
Kdgn#24 with P.O.R.	35	69.00	17.70
Kdgn#24 without P.O.R.	30	63.00	18.80
Disadvantaged	15	56.40	27.60

A Posteriori analysis indicates that the Dale Avenue and Advantaged Controls score significantly higher than the other groups, with no statistical difference between Dale Avenue and the Advantaged Controls. (see table 45)

TABLE 45

Group	Mean	F-Score
Advantaged	86.0	
		F=1.18
Dale Avenue	79.6	
		F=2.48*
Kdgn#24 with P.O.R.	69.0	
		F=<1.0
Kdgn#24 without P.O.R.	63.0	
Disadvantaged	56.4	

*F=2.30
α<.01
(30.35)

Analysis of the post-test data reveals that there are significant differences among groups. The F value of 12.30 exceeds that expected beyond the .01 level of probability. (see table 46). The mean, standard deviation and number of subjects are presented in table 47.

TABLE 46

Kindergarten AoV Identity and Body Parts Post-test				
Source	Sum of Squares	df	Mean Squares	F
Between groups	9880.86	4	2470.21	12.30*
Within groups	24288.60	121	200.73	
Total	34169.46	125		

*F= 3.47
α .01

TABLE 47

Group	N	Mean	S.D.
Advantaged	15	87.50	7.47
Dale Avenue	30	88.60	7.00
Kdgn#24 with P.O.R.	35	82.90	14.40
Kdgn#24 without P.O.R.	30	68.20	20.90
Disadvantaged	15	64.30	20.90

Post analysis of the contrasts between means shows that the Dale Avenue Advantaged and now the Kdgn #24 with the Performance Objectives score significantly better than the Kdgn#24 without the Performance Objectives and Disadvantaged Group. (see table 48.)

TABLE 48

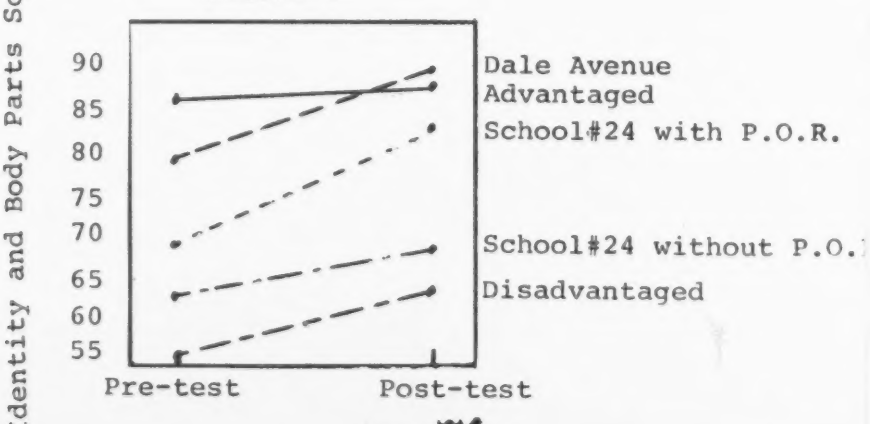
Group	Mean	F-Score
Dale Avenue	88.6	
		F=<1.0
Advantaged	87.5	
		F= 1.05
Kdgn#24 with P.O.R.	82.9	
		F= 3.48*
Kdgn#24 without P.O.R.	68.2	
Disadvantaged	64.3	

* F= 2.30
< .01
(30.35)

The post-test data on the Identity and Body Parts Kindergarten is presented graphically in Figure-7.

Kindergarten - Identity and Body Parts Scores- Plotted over time.

FIGURE 7



DISCUSSION

The test data indicates that the Dale Avenue Pre-Kindergarten and Kindergarten children have shown significant gains on the Identity and Body Parts Checklist, Peabody Picture Vocabulary Test and Skill Assessment Test far exceeding that of the Disadvantaged Control Groups.

Comparing the pre and post test performance on the Peabody Picture Vocabulary Test and Skill Assessment Test it can be seen that although the Dale Avenue children do not reach a level comparable to the advantaged groups, the gap is not as great at post-test time as at pre-test time. The disadvantaged groups, however, are still very far behind.

Since the Title III team was not hired until October 15, 1970, pre-testing did not begin until some eight or ten weeks into the school year. During this period the children were taught many of the items found on the tests. The post-test results, although outstanding, would have been even more so if pre-testing had occured at the very beginning of the school year prior to teaching.

It is interesting to note that on the Identity and Body Parts Checklist the Dale youngsters score better than the advantaged group. (Special emphasis is placed on knowledge of self). The Kindergarten #24 with Performance Objectives Group made substantial gains in performance on this test, raising their average score almost 14 points. A possible explanation for this might be the stress placed on these items when feedback was presented to the teacher. Since School

#24 group was not given feedback until about five months into the school year, this gain is a great credit to the teacher and children.

We on the Title III team feel that the Pre-kindergarten and Kindergarten program in Dale Avenue School has displayed outstanding results for a variety of reasons. This, of course, is our subjective analysis.

In the Pre-kindergarten the five to one ratio allows for much individual and small group attention. The needs of the children can be met much more easily than in a large classroom situation where the ratio is perhaps twenty-six to one. Although in the Kindergarten the ratio is approximately ten to one, small group and individual attention can still be given.

The feedback that is quickly given to the teachers on the test results, allows them to ascertain what skills particular children need to learn, in which group to include them, and what strengths and weaknesses they possess. If the teacher is not sure how to tackle the special problems of the individual children, expert guidance from the appropriate source (speech therapist, audiologist, psychologist, project director) is available. Activities for remediation or development and resource materials are suggested and available. The Title III open office policy allows for constant discussion with teachers on individual needs of children. After classrooms are monitored additional suggestions are given to the teachers.

Parents think highly of the Pre-kindergarten and Kindergarten Program as indicated on the questionaires that they filled out and returned to the school in June, 1971. Their positive attitude may rub off on their children and vice versa. Parents in Pre-kindergarten and Kindergarten are required to attend three conferences a year at which time they review their children's progress on the Individual Performance Objective Record Booklets. They are given suggestions on how they can help their children at home. Several Kindergarten mothers have also volunteered as teacher-moms and have worked on a one to one basis with other Kindergarten children. Before they work with these children who display learning difficulties, the teacher-moms attend training sessions under the guidance of the Project Director.

Dale Avenue School has developed a fine reputation and members of the general population of Paterson want their children to attend the school. Since it is impossible to accept all those who apply, it is therefore, an easy task to make parent involvement mandatory. P.T.A. meetings are crowded. Parents want to participate. They willingly act as tour guides, spend hours making tour guide vests, attend reading and language workshops, attend and participate at conferences where Dale Avenue is highlighted, cook, bake and serve at Dale Avenue functions, work in the library, model in our fashion show and serve on the Parent Committee.

It is also possible that the physical appearance of the school plays a role in the Pre-kindergarten and Kindergarten results. Children may very well take special pride in and enjoy working in the peace-

ful, cheerful atmosphere of this school. The carpeted floors, art decorated hallways, air conditioned surroundings, bathrooms adjacent to the classrooms, many manipulative materials provided by Title I funds for the Pre-kindergarten and some additional materials provided by these funds for the Kindergarten, help to make learning a joyful experience.

The warm, pleasant attitudes of the hand picked Pre-kindergarten and Kindergarten teachers and aides who work in this program can also have a positive affect on the children. Although the Pre-kindergarten and Kindergarten programs are structured rather than Traditional (as regards the skills that are to be taught) the teachers can use their own creativity to teach these skills in any way they wish. The Performance Objective Record provides for teacher accountability since it indicates whether and how much children progress in each area (listening, naming, etc.). The relaxed attitude of the teachers helps to make the open visiting policy of the school so successful. The children seem to take the steady stream of visitors in their stride just as the teachers do. The children also take the testing program as an expected part of their school lives. Rapport is easily gained between children and testers and fright and strain are not part of the testing situation. In fact the children seem to thrive on the individual attention.

The many workshops that the teachers, paraprofessionals, parents, local and out of town visitors attend provide in-service training. These sessions are held during school hours whenever possible. The use of the classroom perceptual training

materials, suggestions for developing receptive and expressive language, for working with children with learning and behavior problems and a rationale and description of our testing program are some of the areas covered in the workshops.

The art, music, physical education, science and speech specialists provide invaluable help to the Pre-kindergarten and Kindergarten teachers in many areas included in the Performance Objective Record. In many instances they provide stimulating first experiences in teaching skills and give suggestions to the teachers on how they can follow through.

The children, teachers, administrators and parents have all been pleased with what happened in Pre-kindergarten and Kindergarten during the 1970-71 year. We want our children to continue into Kindergarten and First Grade with the same joy and sense of achievement and worth. To help them to maintain their gains (or possibly show additional gains), to keep them stimulated, joyful and moving at their own rate from skill to skill is our goal for the 1971-72 school year.

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